

1 What is claimed is:

2 1. A semiconductor build-up package comprising:

3 a die having an active surface, a passive surface, sides between the active surface and
4 the passive surface, and a plurality of bonding pads on the active surface of the die;
5 a metal carrier having a surface with a cavity for accommodating the die; and
6 a plurality of dielectric layers formed on the active surface of the die and the surface
7 of the metal carrier, wherein each dielectric layer has a plurality of conductive
8 columns for inner electrical connection of the bonding pads of the die, at least a layer
9 of conductive traces is formed between the dielectric layers.

10 2. The semiconductor build-up package in accordance with claim 1, wherein the surface
11 of the metal carrier is coplanar to the active surface of the die.

12 3. The semiconductor build-up package in accordance with claim 1, wherein at least one
13 conductive column of one of the dielectric layers is vertically bonded on the conductive
14 column of the adjacent dielectric layer.

15 4. The semiconductor build-up package in accordance with claim 1, further comprising
16 a plurality of solder balls, bumps or pins on the outermost dielectric layer.

17 5. The semiconductor build-up package in accordance with claim 4, wherein the
18 plurality of solder balls are in grid array fashion.

19 6. The semiconductor build-up package in accordance with claim 1, wherein the metal
20 carrier is made of copper, aluminum or their alloys.

21 7. The semiconductor build-up package in accordance with claim 1, wherein the
22 conductive columns are made of copper, aluminum or their alloys.

23 8. The semiconductor build-up package in accordance with claim 1, wherein the
24 dielectric layers are polyimide, epoxy, BT resin, FR-4 resin, FR-5 resin, BCB, or
25 PTFE.

26 9. The semiconductor build-up package in accordance with claim 1, wherein the metal
27 carrier covers the passive surface and the sides of the die.

10075226.021502

- 1 10. A semiconductor build-up package comprising:
 - 2 a die having an active surface , a passive surface and a plurality of bonding pads on
 - 3 the active surface of the die;
 - 4 a metal carrier having a surface with a cavity for accommodating the die; and
 - 5 a first dielectric layer on the active surface of the die and the surface of the metal
 - 6 carrier, wherein the first dielectric layer has a plurality of conductive columns bonded
 - 7 on the bonding pads of the die.
- 8 11. The semiconductor build-up package in accordance with claim 10, wherein the
- 9 surface of the metal carrier is coplanar to the active surface of the die.
- 10 12. The semiconductor build-up package in accordance with claim 10, further comprising
- 11 at least a dielectric layer with conductive columns formed on the first dielectric layer.
- 12 13. The semiconductor build-up package in accordance with claim 12, further comprising
- 13 solder balls, bumps or pins are formed on the outermost dielectric layer.
- 14 14. The semiconductor build-up package in accordance with claim 10, wherein the metal
- 15 carrier is made of copper, aluminum or their alloys.
- 16 15. The semiconductor build-up package in accordance with claim 10, wherein the
- 17 conductive columns are made of copper, aluminum or their alloys.
- 18 16. The semiconductor build-up package in accordance with claim 10, wherein the
- 19 plurality of dielectric layers are polyimide, epoxy, BT resin, FR-4 resin, FR-5 resin,
- 20 BCB, or PTFE.

21
22
23 Add
24 A2
25
26
27